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ABSTRACT

A discussion of young children's production of English utterances with missing constituents focuses on the omission of subjects. The theory that young children have different grammars from those of adults is disputed, and it is suggested that, instead, subjects are omitted due to performance factors. Processing limitations in child language are evidenced in early difficulties with utterance length, omission of other constituents, and some children's reduction of the subject to a schwa. A study of the speech of three children supported the processing theory's prediction that children's subjectless sentences would tend to have longer verb phrases than sentences with subjects. Therefore, in contrast to the notion that children acquiring English represent pro-drop grammars until they are 2 to 3 years old, it is proposed that children initially represent overt subjects as obligatory (non-pro-drop), and only when hearing subjectless sentences do they change their grammars to pro-drop, as in Italian. (MSE)

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Why do children omit subjects?[1]

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It is well known that children acquiring English frequently produce utterances with missing constituents. This paper is concerned with why children produce sentences without subjects, like those shown below (from Bowerman, 1973).

(1) hug Mommy
play bed
writing book
see running

One theory of these utterances is that young children represent different grammars than adults. In particular, Hyams and her colleagues have proposed that all children start off with a pro-drop grammar, one where overt subjects are optional (e.g., Hyams, 1986). This is the correct grammar for a pro-drop language like Italian but incorrect for a non pro-drop language like English, where overt subjects are obligatory. So children acquiring English need some sort of evidence in order to change their grammar from pro-drop to non-pro-drop. There are several different proposals of exactly what sort of input causes the parametric switch (e.g., Borer and Wexler, 1988; Hyams, 1986, 1987; Pierce, 1987).

In this paper, evidence is presented for an alternative explanation, which is that young children represent the correct grammars from the very start but omit subjects because of performance factors. This performance explanation of subjectless sentences motivates a considerable shift in how we look at the acquisition of pro-drop and non-pro-drop languages.

Comparing the processing theory with the pro-drop theory

Before discussing the empirical evidence, it is worth considering one strong motivation for assuming that such a processing limitation exists. It is often argued, on both empirical and theoretical grounds, that young children represent the same sort of linguistic rules and principles as adults (Bloom, 1989; Chomsky, 1986; Hyams, 1986; Pinker, 1984). But if this is true, then why are children's utterances so short? Why is there a 2-word stage at all? One answer--in fact, the only one ever proposed--is that while children represent the same sort of knowledge as adults, they have problems using this knowledge, some sort of processing bottle-neck. To put it another way, the only way to coherently hold on to the view that children represent adult-like grammars is to suppose that what they say is not an adequate

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reflection of what they know.

On the empirical side, there is considerable evidence for processing limitations in child language. For one thing, length limitations show up even when children imitate adult speech. The length of a young child's imitation of an adult sentence is not predicted by how long the adult sentence is, but rather by how long the child's spontaneous utterances tend to be (Brown and Fraser, 1963). This hints that the reason children's utterances tend to be short has nothing to do with their grammars, but is due to a general inability to utter long strings of words.

Further, children omit not only subjects, but also direct objects, indirect objects, verbs, locative arguments, and so on. In fact, much of the early debate over missing constituents in child language concerned sentences without verbs (Bloom, 1970; Bowerman, 1973; Braine, 1974; Brown, 1973). As Brown (1973) notes, often children appear to be producing two- or three-word subsets of longer sequences. Instead of saying *I put the book on the table*, a child might say *I put* or *put book* or *put table*, and so on. The most parsimonious explanation of such utterances should account for all the omissions in child language--not just missing subjects.

Finally, Mazuka, Lust, Wakayama, and Snyder (1986) point out that some children go through a stage where they neither include the subject nor do they omit it. Instead, they reduce it to a schwa (see Bloom, 1970). This would follow if children have difficulty uttering subject NPs but know they are required and thus make some effort to produce them. This behavior is entirely mysterious from the standpoint of the pro-drop hypothesis, which predicts that children will either include the subject or omit it.

While all of this is suggestive, it hardly makes for a knock-down argument in favor of the processing theory. Therefore it becomes interesting to try to compare the pro-drop theory and the processing theory more directly. One way to do this is as follows:

Syntactic complexity and subjectless sentences

If subjects are omitted because of processing difficulties we would expect them to be omitted more frequently from longer structures than from shorter ones. Therefore, the subjectless sentences that children produce should tend to have longer VPs than their sentences with subjects, because long VPs exert more of a processing load than short VPs.

This prediction was first tested by Bloom (1970), who studied a 22-month-old child's use of one verb -- *make*. She predicted that subjects should be omitted more frequently with long VPs, so a child would be more likely to omit the subject if the VP was something like *make me a cake*, than if it was *make cookie*. Bloom found 45 sentences with the verb *make*, 13 with subjects and 32 without. The mean lengths of the VPs were 2.77 and 3.25 respectively, a significant difference ($p < 0.05$, one-tailed).

A few years later, Braine (1974) performed the same sort of analysis on the spontaneous speech of two children, one acquiring English (Jonathan), the other acquiring

Hebrew (Odi). He found no significant differences in the mean length of VPs for subjectless sentences versus sentences with subjects. He concluded that there is no length limitation on children's language production, which runs counter to Bloom's finding and apparently refutes the processing theory. However, there are certain problems with Braine's study that make accepting his conclusion premature.

First, some of the utterances that he counted as VPs did not actually include a verb, but were instead "marked by the content of the utterance as including actions". It is not clear whether these should have been included. Presumably many of them--particularly those that were only one word long--did not actually require a subject at any representational level. Therefore including such utterances might have spuriously lowered the mean length of sentences classified as "subjectless VPs".

A related problem is that Braine included requests, statements, and questions in his analysis of Jonathan's speech and statements and questions in his analysis of Odi's speech. But some requests and questions do not require subjects, such as *give that to me!* and *want a cookie?*. As such, they have a different status than VPs where the subject actually has to be there and are irrelevant to both the pro-drop hypothesis and the processing hypothesis.

Finally, adult Hebrew *does* allow for null subjects in some contexts, and therefore some of Odi's subjectless sentences may actually be pro-drop utterances. None of the arguments against the pro-drop hypothesis concern children's subjectless sentences in languages where such sentences are acceptable; the interesting debate is over the status of subjectless sentences that are unacceptable in the adult grammar.

In light of these problems, I decided to do an analysis similar to what Braine did, using a broader data base and controlling for the problems mentioned above.

Analysis

Subjects

The subjects were three children studied by Brown (1973): Adam, Eve, and Sarah. Transcripts of their speech are stored in computer text files as part of the CHILDES data base (MacWhinney and Snow, 1985) and a computer search program was used for all analyses. Adam's speech was studied from 10 2-hour samples taken from the ages of 2;3 to 2;7, Eve's speech was studied from 10 2-hour samples taken from the ages of 1;6 to 1;10, and Sarah's speech was studied from 20 1-hour samples taken from the ages of 2;3 to 2;7.

Procedure

The hypothesis is that children's subjectless sentences will tend to have longer VPs than sentences with subjects. One necessity when doing such an analysis is to exclude subjectless sentences that are in fact acceptable in the adult grammar, such as imperatives and some questions. Because of this, only utterances with two types of verbs were used. These were (i) past-tense verbs, which cannot be used as requests or imperatives (e.g., *wanted*), and (ii) verbs that denote cognitive states or involuntary acts (e.g., *need*). This

second type will be called "non-imperatives", since they can almost never appear in the imperative form. There were a total of 48 past-tense verbs and 20 non-imperatives used in the search.[2]

For the analyses below, questions, statements with *no* or *don't*, statements where the verb is part of an embedded clause, and rote imitations of adult speech were not included.

Results

Each child's utterances were analyzed separately for the two verb types, through one-tailed *t*-tests comparing the VP-length between sentences with and without subjects (see Figure 1 at the end of the paper). In all cases but one, the difference was statistically significant. The exception was Sarah [Past-Tense Verbs]; although the difference was in the right direction, it was insignificant (possibly as a result of the low sample size). When the two verbs types were counted together, however, there was a significant effect for each child, including Sarah. These results strongly confirm the predictions of the processing theory.

An alternative theory of the length difference

There is another explanation of the length difference that is worth considering, one consistent with the pro-drop hypothesis. Children may omit a subject only when they believe its meaning can be inferred by the listener from context. If long VPs supply more of the relevant context than short VPs, this would explain why subjectless sentences tend to have longer VPs than sentences with subjects.

We can compare this explanation and the processing account in the following way. Suppose some of the children's utterances have long subjects (e.g., *the big mean lion*) and others have short subjects (e.g., *you*). The processing account predicts that the former class of sentences should have shorter VPs than the latter, since a long subject imposes more of a processing load. In sum, we would predict a gradual decrease in the length of the VP as a function of subject size, as shown in (2). The pragmatic hypothesis, in contrast, predicts no difference between overt subjects of different lengths, so long as they all have unambiguous reference. This is shown in (3).

(2) **Processing theory--predictions about VP-length**
no subject > short subject > long subject

(3) **Pragmatic theory--predictions about VP-length**
no subject > short subject = long subject

Unfortunately, children at the ages where they omit subjects rarely produce subjects

[2]These were taken from an exhaustive list of verbs previously compiled from the speech of Adam, Eve, and Sarah by Michelle Hollander, as part of an unrelated study. I am grateful to her for providing them to me.

that are more than one word long. But we can compare the theories by contrasting pronoun subjects with non-pronoun subjects. Since pronouns are phonetically shorter than non-pronouns, the processing theory predicts some difference in VP-length as a function of whether or not the subject is a pronoun. As long as both the pronoun and non-pronoun subject are unambiguous, no such prediction would come out of the pro-drop hypothesis.

The prediction was tested using the data compiled above. Since it is important that all subjects in this analyses be unambiguous, the only pronouns included were *I* and *you*, since pronouns like *she* or *they* are often ambiguous and could require a longer VP because of this. The analysis was done collapsed over verb types; the results are shown in Figure 2 at the end of the paper.

The length of the VP clearly decrease as a function of the size of the subject. Contrast analyses testing for a linear trend in VP-length as a function of subject size showed a significant effect for each of the three children.

Why are subjects omitted more frequently than objects?

Finally, I want to briefly consider the question of why subjects are omitted more frequently than objects. Across the three children, 55% of their declarative sentences have missing subjects. In order to calculate the proportion of missing objects, we have to look only at contexts where verbs must take an obligatory object. This can only serve as an estimate, because it's not at all clear whether the adult intuition about which verbs take obligatory objects is going to be the same as the child's.

Nevertheless, when we do the analysis, it turns that children omit the object a total of 9% of the time, which is surprisingly high according to some accounts, but also significantly different from the proportion of subject omission. Every child omitted objects some of the time, and every child omitted subjects more frequently than objects (see (4)).

(4) **Omission from obligatory contexts**

	Adam	Eve	Sarah	Total
SUBJECTS:	57%	61%	43%	55%
OBJECTS:	8%	7%	15%	9%

If the subject/object difference is due to a processing asymmetry, we should expect to find other differences between subjects and objects. For one thing, given that pronouns don't exert much of a processing load, we would expect them to be more frequent in subject position than in object position. This seems to be the case -- for each child, there is a greater proportion of pronoun subjects than pronoun objects (see (5)). Another prediction is that non-pronoun subjects will be shorter in length than non-pronoun objects, a difference that also occurs (see (6)). When we sum up over the three children, both of these differences are highly significant.

(5) Proportion of overt NPs that are pronouns

	Adam	Eve	Sarah	Total
SUBJECTS:	41%	36%	91%	51%
OBJECTS:	25%	14%	33%	24%

(6) Mean Length of non-pronoun NPs

	Adam	Eve	Sarah	Total
SUBJECTS:	1.18	1.26	1.00	1.16
OBJECTS:	1.43	1.63	1.48	1.59

It's worth stressing that these are all independent analyses; just because subjects are omitted more frequently than objects, it does not follow that pronominal subjects will be more frequent than pronominal objects, or that non-pronoun subject NPs will be shorter than non-pronoun object NPs. In fact, these two other differences are a mystery from the standpoint of the pro-drop hypothesis. The most natural way to explain all three effects is in terms of processing load; there are more resources available for the end of the sentence than for the beginning. As a result of this processing asymmetry, subjects are omitted more frequently than objects, pronouns are more frequent in subject position than object position, and subjects tend to be shorter than objects.

Discussion

Once we have an alternative explanation for why children omit subjects, there is no independent reason to hold onto the pro-drop hypothesis. In fact, the position that children acquiring English represent pro-drop grammars until they are about two-and-a-half or three leads to a host of problems. For one thing, you need some sort of account of why the child goes so long without switching to the adult grammar. Some theorists appeal to neural maturation or "selective attention" as explanations for why the pro-drop stage lasts so long. While these proposals are logically possible, they are ad hoc, and have little independent support. Furthermore, there is the problem of determining exactly what information causes the pro-drop to non-pro-drop shift. To date, none of the proposals of what causes the parametric switch have met with convincing empirical support.

Finally, the alternative view, which is that all children start off with non-pro-drop grammars, runs into none of these problems. Under this theory, children initially represent overt subjects as obligatory (as in English) and only when hearing subjectless sentences do they change their grammars to pro-drop (as in Italian). It turns out that 2-year-olds acquiring Italian omit subjects far more frequently than 2-year-olds acquiring English (Valian, 1989), which suggests that the switch from non-pro-drop to pro-drop takes place very early in the development of a child learning a language like Italian.

The hypothesis that all children initially represent pro-drop grammars has led to some very interesting theoretical and empirical speculation. However, the data fail to support this

hypothesis. Instead, it appears that children acquiring English omit subjects because of a processing limitation on language production and that all children initially represent non-pro-drop grammars.

References

Bloom, L. (1970). *Language development: Form and function in emerging grammars.* Cambridge, MA.: MIT Press.

Bloom, P. (1989). Syntactic distinctions in child language, *Journal of Child Language*, in press.

Borer, H. and Wexler, K. (1988). The maturation of grammatical principles. Unpublished manuscript, MIT.

Bowerman, M. (1973). *Early syntactic development: A cross-linguistic study, with special reference to Finnish.* Cambridge: Cambridge University Press.

Braine, M.D.S. (1974). Length constraints, reduction rules, and holophrastic processes in children's word combinations, *Journal of Verbal Learning and Verbal Behavior*, 13, 448-456.

Brown, R. (1973). *A first language: The early stages.* Cambridge, MA: Harvard University Press.

Brown, R. and Fraser, C. (1963). The acquisition of syntax. In C.N Cofer and B. Musgrave (Eds.), *Verbal behavior and learning: Problems and processes*, New York: McGraw-Hill.

Chomsky, N. (1986) *Knowledge of language: Its nature, origin, and use.* New York: Praeger.

Hyams, N. (1986). *Language acquisition and the theory of parameters.* Dordrecht: D. Reidel.

Hyams, N. (1987). The setting of the null subject parameter: A reanalysis. Paper presented at the Boston University Conference on Language Development, October 24, 1987.

MacWhinney, B. and Snow, C. (1985). The Child Language Data Exchange System, *Journal of Child Language*, 12, 271-296.

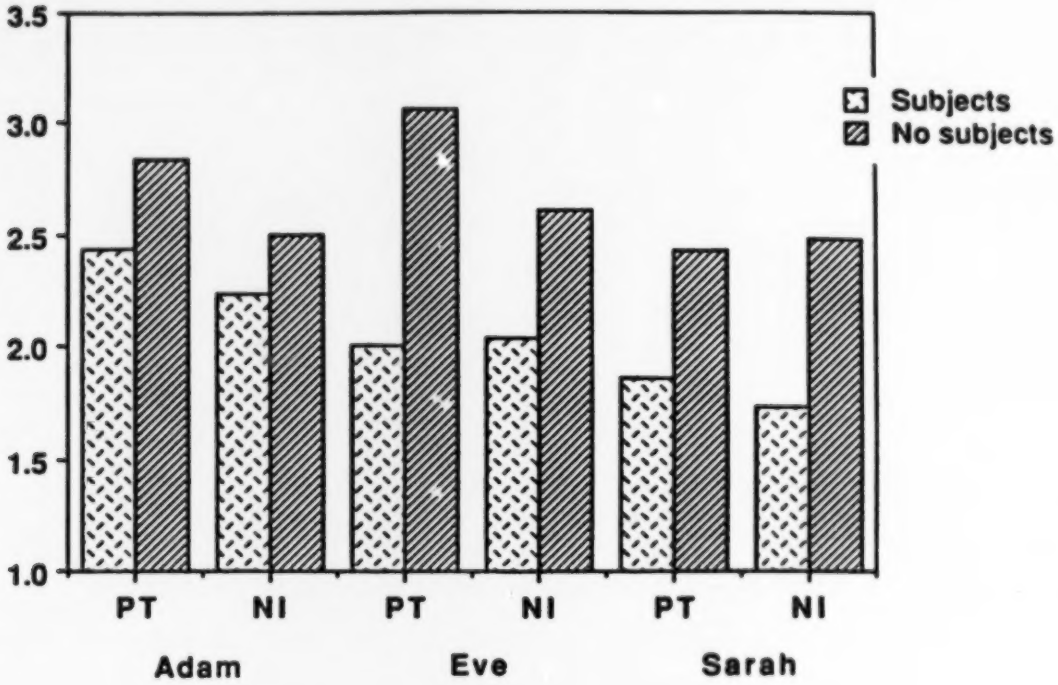
Mazuka, R., Lust, B., Wakayama, T., and Snyder, W. (1986). Distinguishing effects of parameters in early syntax acquisition: A cross-linguistic study of Japanese and English, *Papers and Reports on Child Language Development*, 25, 73-82.

Pierce, A. (1987). Null subjects in the acquisition of French. Paper presented at the Boston University Conference on Language Development, October 24, 1987.

Pinker, S. (1984). *Language learnability and language development.* Cambridge, MA: Harvard University Press.

Valian, V. (1989). Children's production of subjects: Competence, performance, and the null subject parameter. Paper presented at the Stanford Child Language Research Forum, April 9, 1989.

Figure 1: VP-length in sentences with and without subjects



PT = Past Tense verbs
NI = Non-Imperative verbs

Figure 2: VP-Length as a function of subject size